

In order to provide constant monitoring, the following reference electrodes with processor and printer need to be installed at the following sites.

Hadnot Point Plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - pre & post chlorine  
 Methane presence - Base ment and supernatant rooms  
 Flow - effluent  
 Turbidity  
 DIGESTER TEMP

Camp Geiger plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Methane presence - basement  
 Flow - effluent  
 Turbidity  
 DIGESTER TEMP

Tarawa Terrace plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Methane Presence - Basement  
 Flow - effluent  
 Turbidity - effluent  
 DIGESTER TEMP

Camp Johnson plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Flow - effluent  
 Turbidity - effluent

Onslow Beach Plant

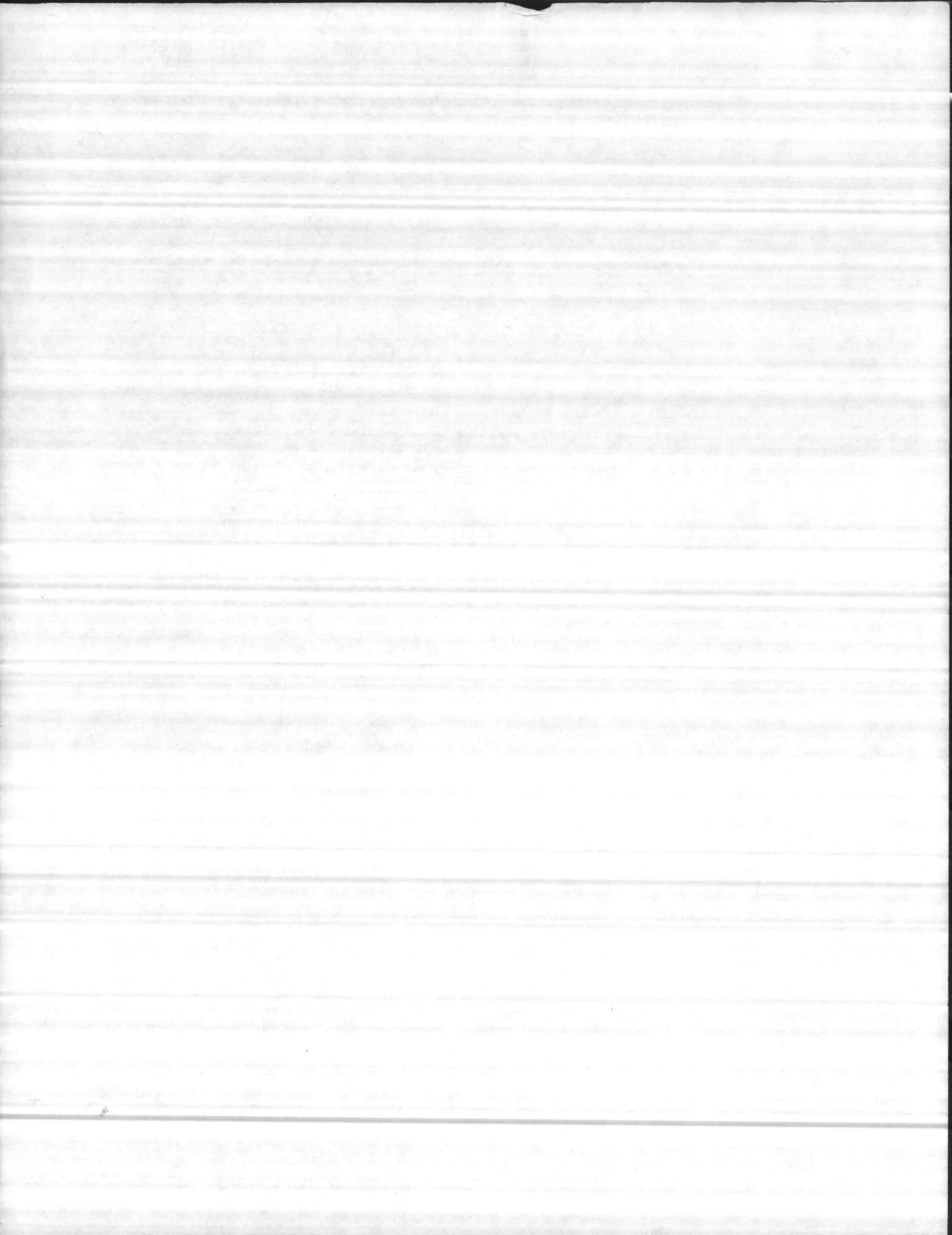
pH - Influent and effluent  
 DO - Effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Flow - effluent  
 Turbidity - effluent

Rifle Range Plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Flow - effluent  
 Turbidity - effluent

Courthouse Bay Plant

pH - Influent and effluent  
 DO - effluent  
 Cl<sub>2</sub> residual - effluent  
 Cl<sub>2</sub> presence - post Cl<sub>2</sub> room  
 Flow - effluent  
 Turbidity - effluent



Monitoring Requirement  
Hadnot Point Wastewater System

Plant, BLDG #22

- A. Digester area for presence of Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- B. Chlorinator room for presence of Chlorine gas. (Alarm)
- C. Pump on/off status (4) pumping stations Bldg #21, (4) Bldg #680 and (2) secondary return pumps, (2) filter pumps.
- D. Intrusion (Alarm)
- E. Power failure (Alarm)
- F. Generator failure (Alarm)
- G. Digester temperature (6)

Influent

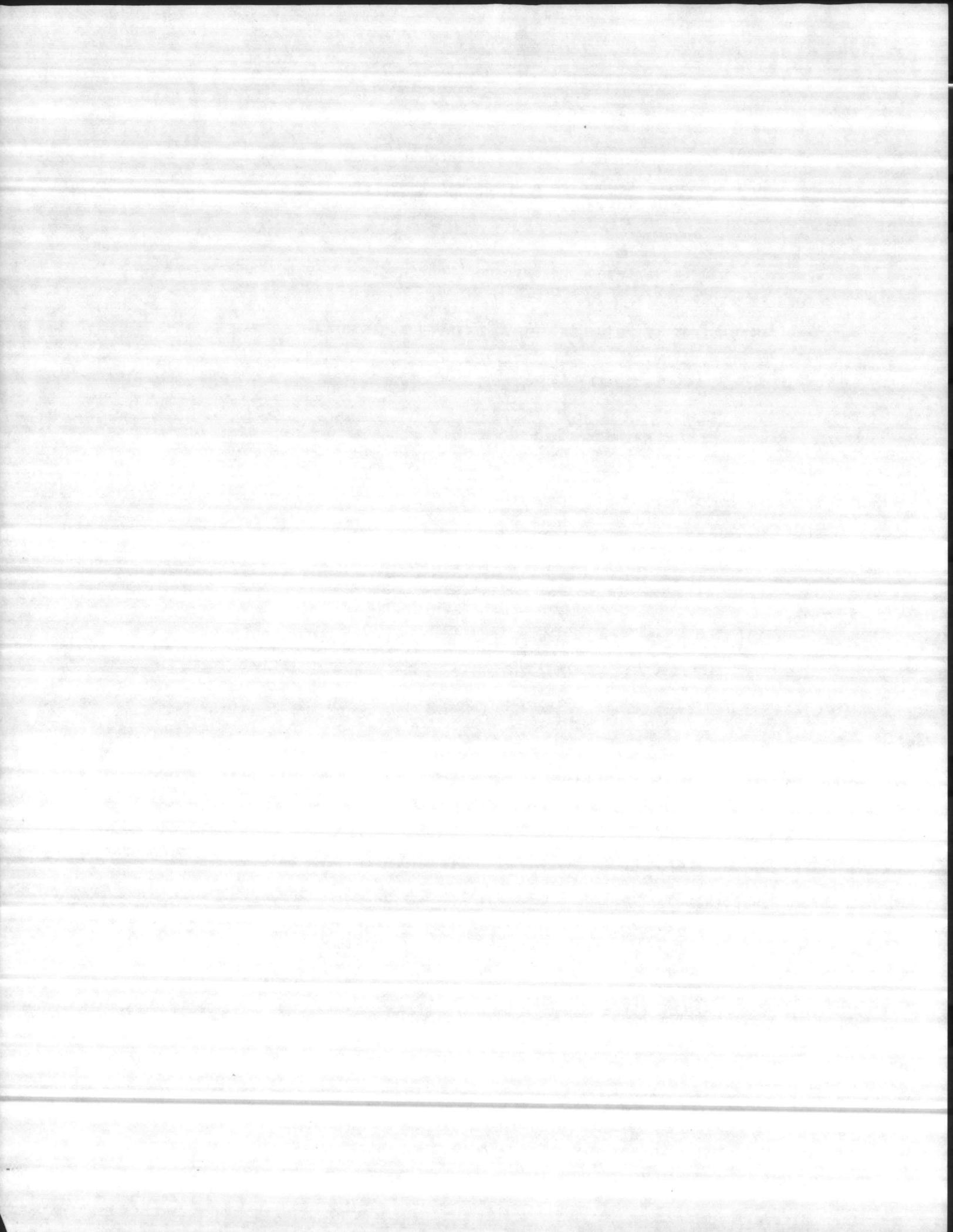
- A. P.H.
- B. Flow
- C. Turbidity

Effluent

- A. Dissolved oxygen
- B. P.H.
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Station, BLDG # S-1761, S-1776, S-1855, S-1055, S-702, S-PT-41, S-34, S-85, H-29, S-47, S-47A, S-1948, S-2633, S-2100, NH-110, S-865 H. Schl, S-46, S-672, LCH-4005, SFC-116, SFC-315, SFC-599, SFC-260, SFC-203, GP-22, S--1455, No number Ord. Pk.

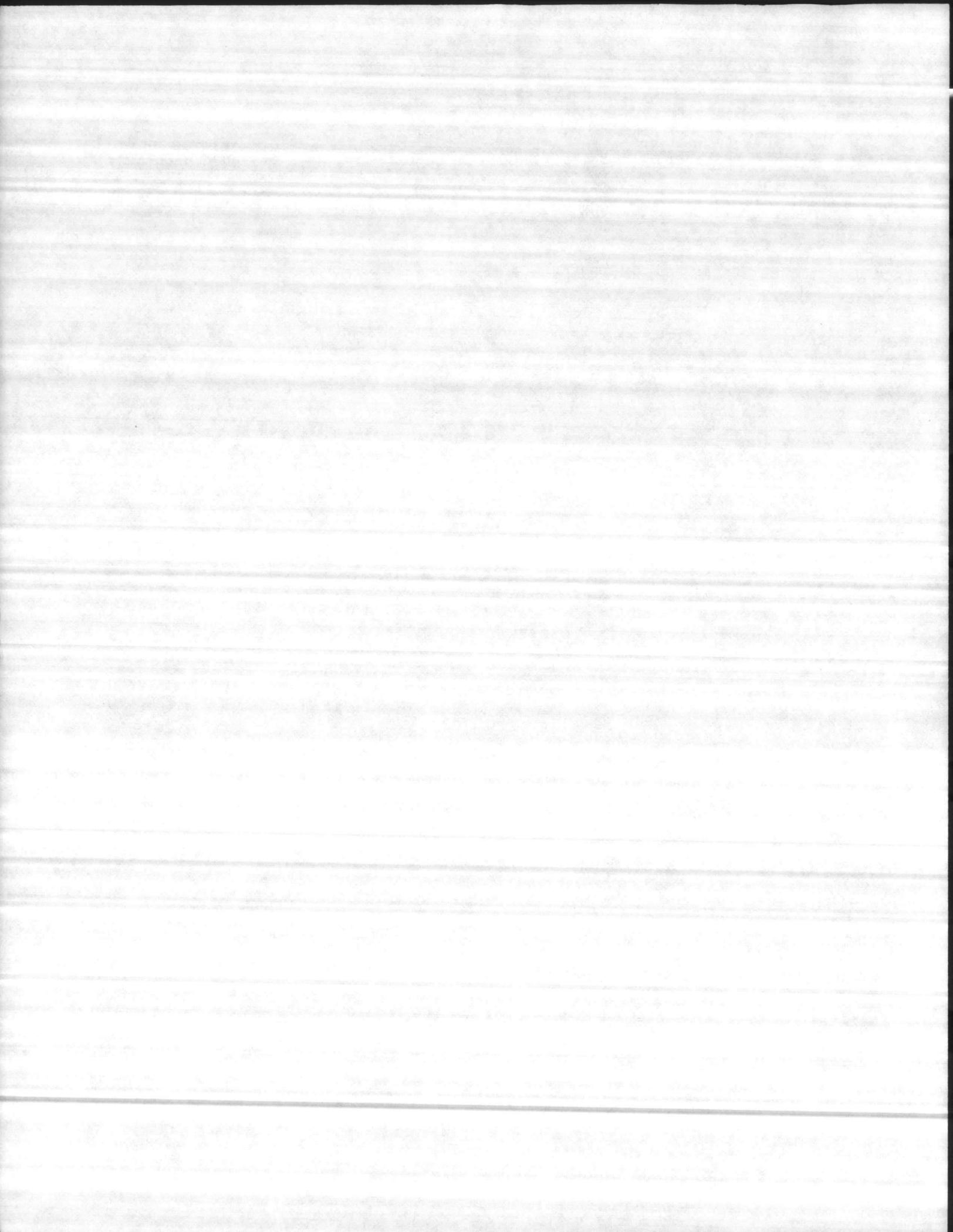
- A. Power failure (Alarm)
- B. Generator failure (Alarm) BLDG # S-1761, S-1776, S-85, H-29, S-47A, S-1948, S-2633, S-2100, S-46, S-672, LCH-4005, SFC-315, SFC-203
- C. Pump on/off status, two pumps in each building.
- D. High level (Alarm)
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- F. Intrusion (Alarm)



(Continued)

Water/Oil Separator Structure # S-1854, S-918, S-1450, S-1747, S-1456, no number-near  
S-1808, no number-near S-1739, SFC-117, no number-near  
SGP-17

- A. Power failure (Alarm)
- B. Pump on/off status, two pumps each
- C. High level (Alarm)



Monitoring Requirement  
Tarawa Terrace Wastewater System

Plant, BLDG TT-35

- A. Digester area for presence of Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- B. Chlorine room for presence of Chlorine gas. (Alarm)
- C. Pump on/off status, (3) influent pumping stations, (2) secondary return pumps, (2) filter pumps.
- D. Intrusion (Alarm)
- E. Power failure (Alarm)
- F. Generator failure (Alarm)
- G. Digester temperature (2)

Influent

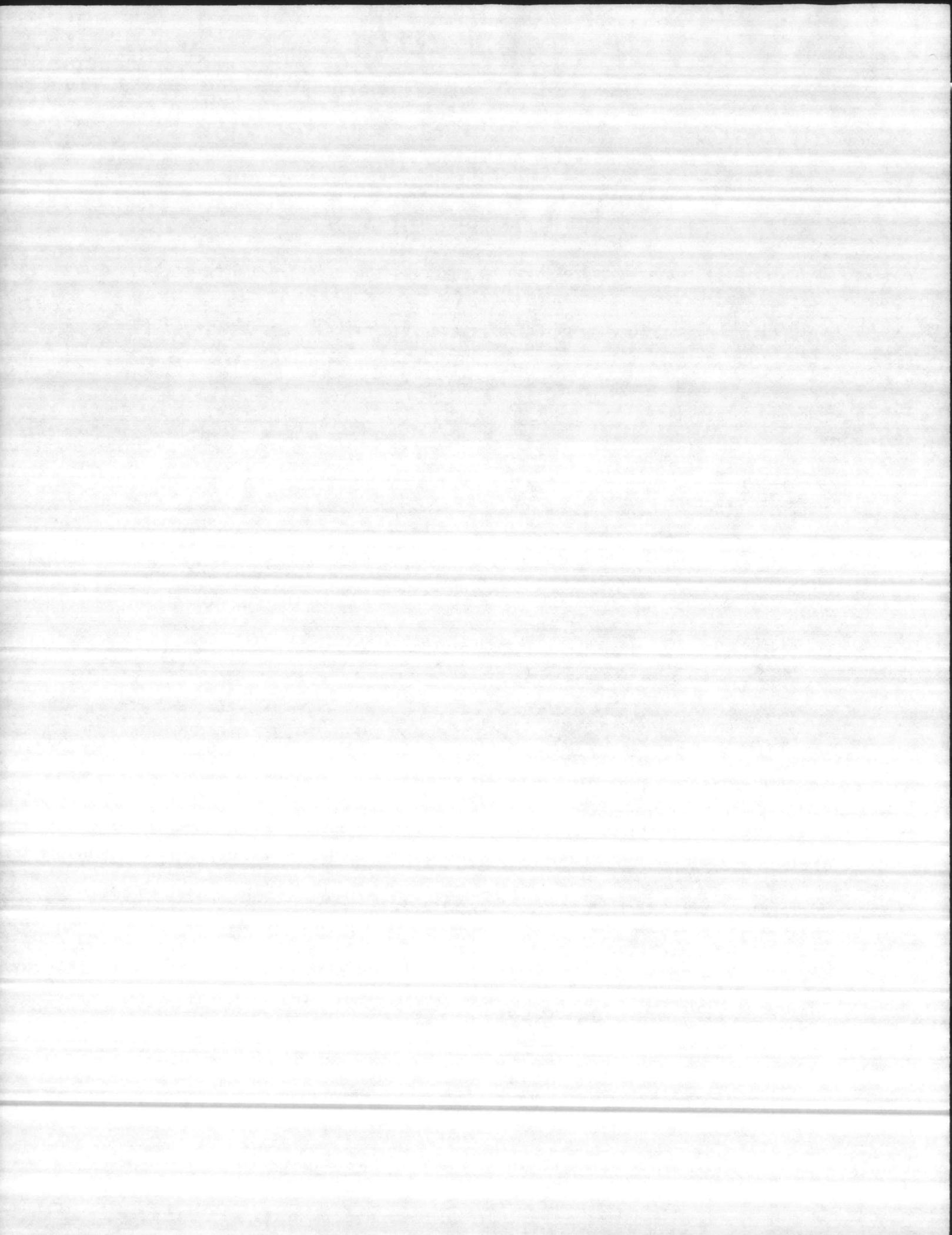
- A. P.H.
- B. Flow
- C. Turbidity

Effluent

- A. Dissolved oxygen
- B. P.H.
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Station, BLDG # TT-32, TT-33, TT-34

- A. Power failure (Alarm)
- B. Generator failure (Alarm)
- C. Pump on/off status, two pumps in each building
- D. High level (Alarm)
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- F. Intrusion (Alarm)



Monitoring Requirement  
Camp Johnson Wastewater System

Plant, BLDG M-136

- A. Chlorine room for presence of Chlorine gas (Alarm)
- B. Pump on/off statue (2) filter pumps and (2) return pumps.
- C. Power failure (Alarm)
- D. Generator failure (Alarm)
- E. Intrusion (Alarm)

Influent

- A. P.H.
- B. Turibidity
- C. Flow

Effluent

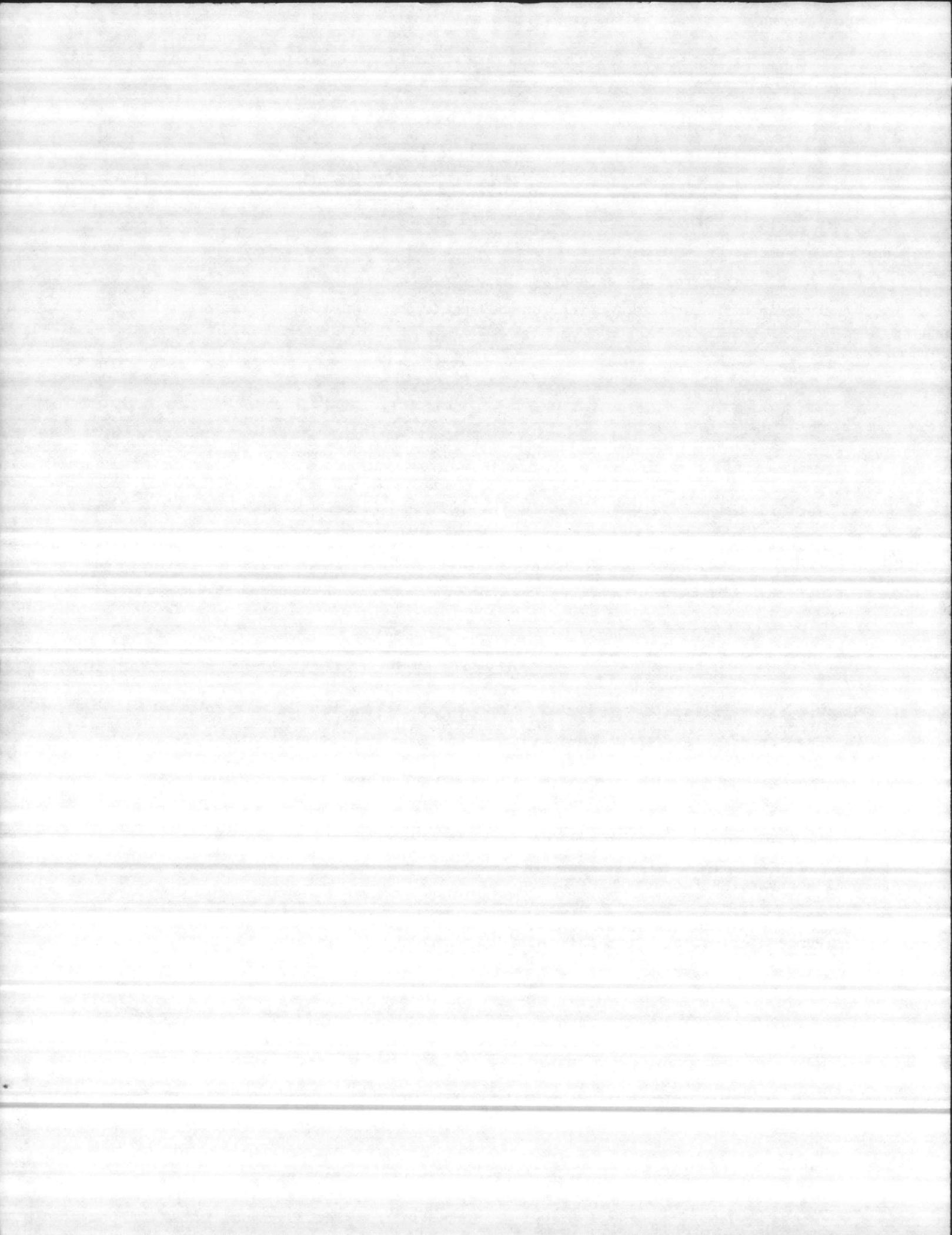
- A. Dissolved oxygen
- B. P.H.
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Station, BLDG # M-SE-23, M-SE-241

- A. Power failure (Alarm)
- B. Generator failure (Alarm)
- C. Pump on/off status, two pumps in each building.
- D. High level (Alarm)
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- F. Intrusion (Alarm)

Water/Oil Seperator Structure # SM-187

- A. Power failure (Alarm)
- B. Pump on/off status, two pumps each
- C. High level (Alarm)



Monitoring Requirement  
Camp Geiger Wastewater System

Plant, BLDG TC-563

- A. Digester rooms for presence of Methane, Hydrogen Sulfide gas and Oxygen content.
- B. Chlorine room for the presence of Chlorine gas.
- C. Pump on/off status on (2) pond pumps, (2) filter pumps, (2) return pumps, tertiary effluent pumps (2), plant discharge pumps (2).
- D. Power failure (Alarm)
- E. Generator failure (Alarm)
- F. Digester temperature (2)
- G. Intrusion (Alarm)

Influent

- A. P.H.
- B. Turbidity
- C. Flow

Effluent

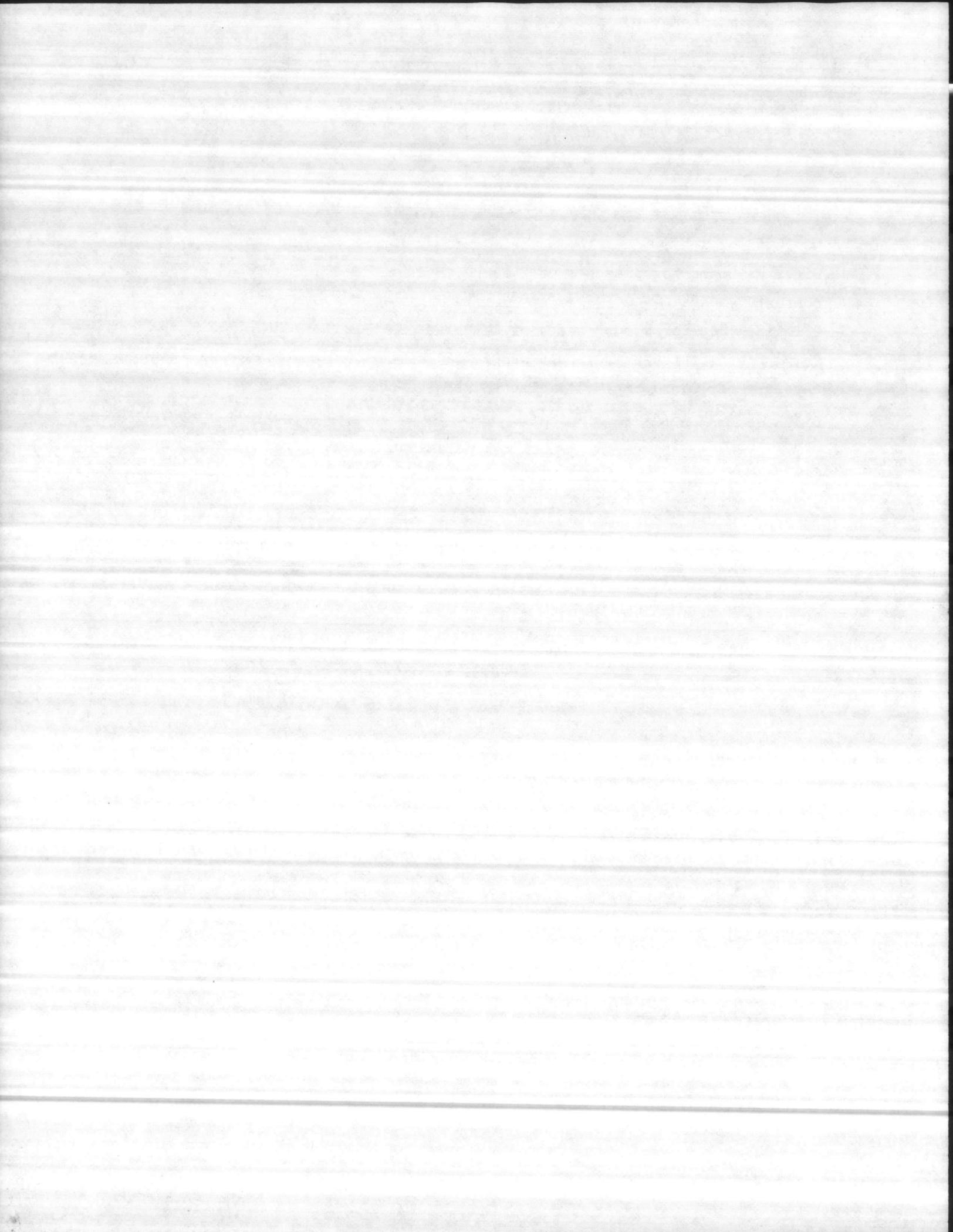
- A. Dissolved oxygen
- B. P.H.
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Station, BLDG # AS-4040, AS-1001, AS-517, AS-426, AS-230, AS-629, AS-606, AS-850,  
AS-902, AS-2001, AS-2808, AS-4125, AS-4147, AS-206, SAS-3526

- A. Power failure (Alarm)
- B. Generator failure (Alarm) BLDG # AS-1001, AS-230, AS-629, AS-606, AS-850,  
AS-2001, AS-4125, AS-206.
- C. High level (Alarm)
- D. Pump on/off status two pumps in each building.
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)

Water/Oil Separator

- A. Power failure (Alarm)
- B. Pump on/off status
- C. High level (Alarm)



Monitoring Requirement  
Rifle Range Wastewater System

Plant, BLDG # RR-92

- A. Chlorine room for presence of Chlorine gas. (Alarm)
- B. Pump on/off status, (2) filter pumps and (2) return pumps.
- C. Power failure (Alarm)
- D. Generator failure (Alarm)
- E. Intrusion (Alarm)

Influent

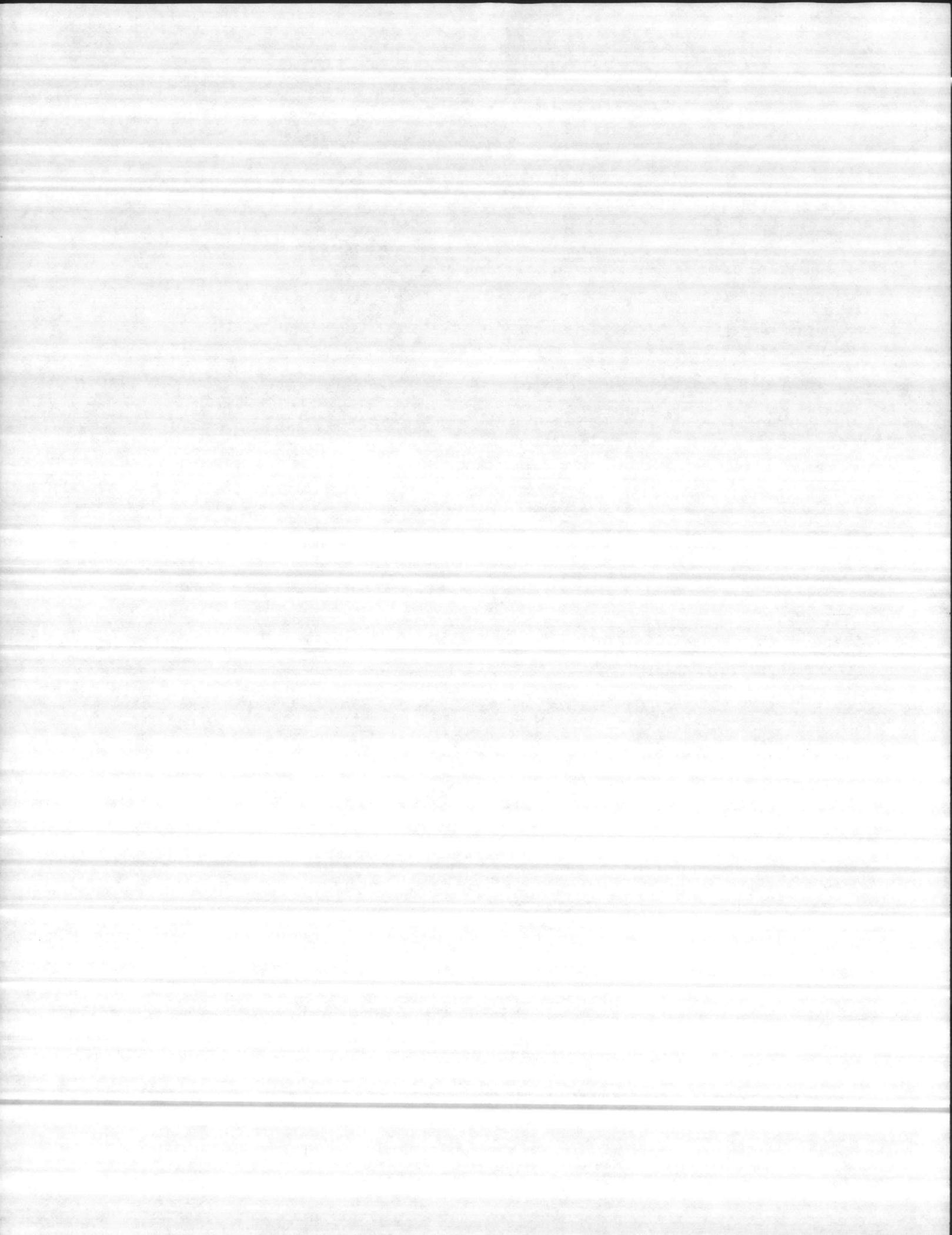
- A. P.H.
- B. Turbidity
- C. Flow

Effluent

- A. Dissolved oxygen
- B. P.H.
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Station, BLDG # RR-52, SRR-60

- A. Power failure (Alarm)
- B. Generator failure (Alarm) BLDG RR-52
- C. High level (Alarm)
- D. Pump on/off status, two pumps in each building
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- F. Intrusion (Alarm)



Monitoring Requirement  
Courthouse Bay Wasterwater System

Plant, BLDG #BB-4

- A. Chlorine room for presence of Chlorine gas. (Alarm)
- B. Pump, on/off status, 3 filter pumps, 2 return pumps.
- C. Equalization pond pumps (2) compressors, (2).
- D. Power failure (Alarm)
- E. Generator failure (Alarm)
- F. Intrusion (Alarm)

Influent

- A. Dissolved oxygen
- B. P.H.
- C. Turbidity
- D. Flow

Effluent

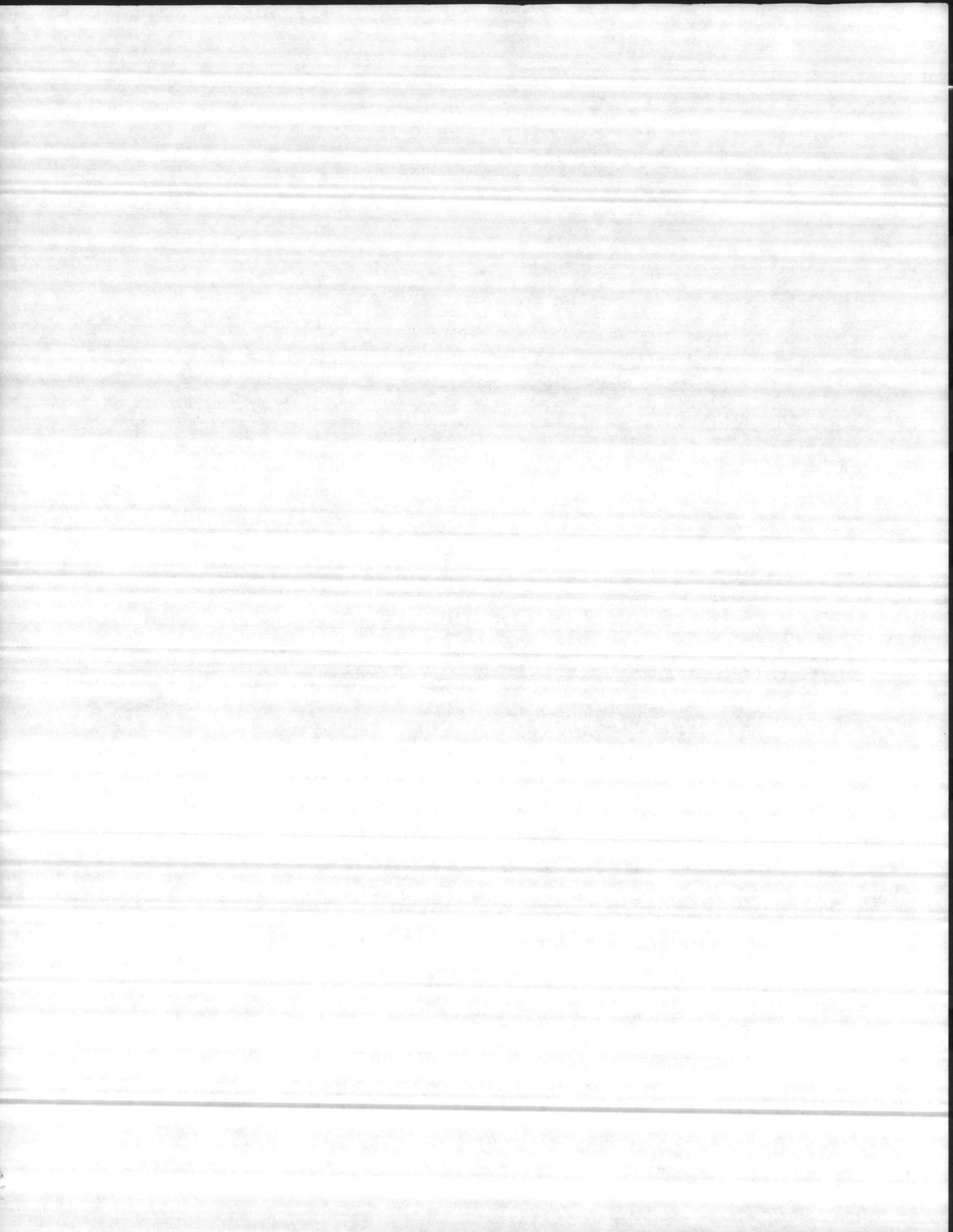
- A. Dissolved oxygen
- B. P.H.
- C. Chlorine Residual
- D. Turbidity
- E. Flow

Lift Stations, BLDG #BB-1, SA-38

- A. Power failure (Alarm)
- B. Generator failure (Alarm)
- C. High level (Alarm)
- D. Pump on/off status two pumps each building.
- E. Methane, Hydrogen Sulfide gas and Oxygen content. (Alarm)
- F. Intrusion (Alarm)

Water/Oil seperator BLDG #S-6-A, S-6-B

- A. Power failure
- B. Pump on/off status
- C. High level (Alarm)



Monitoring Requirement  
Onslow Beach Wastewater System

Plant, BLDG SBA-127

- A. Chlorine room for presence of Chlorine gas (Alarm)
- B. Pump on/off status on (2) filter pumps, (2) return pumps.
- C. Power failure (Alarm)
- D. Generator failure (Alarm)
- E. Intrusion (Alarm)

Influent

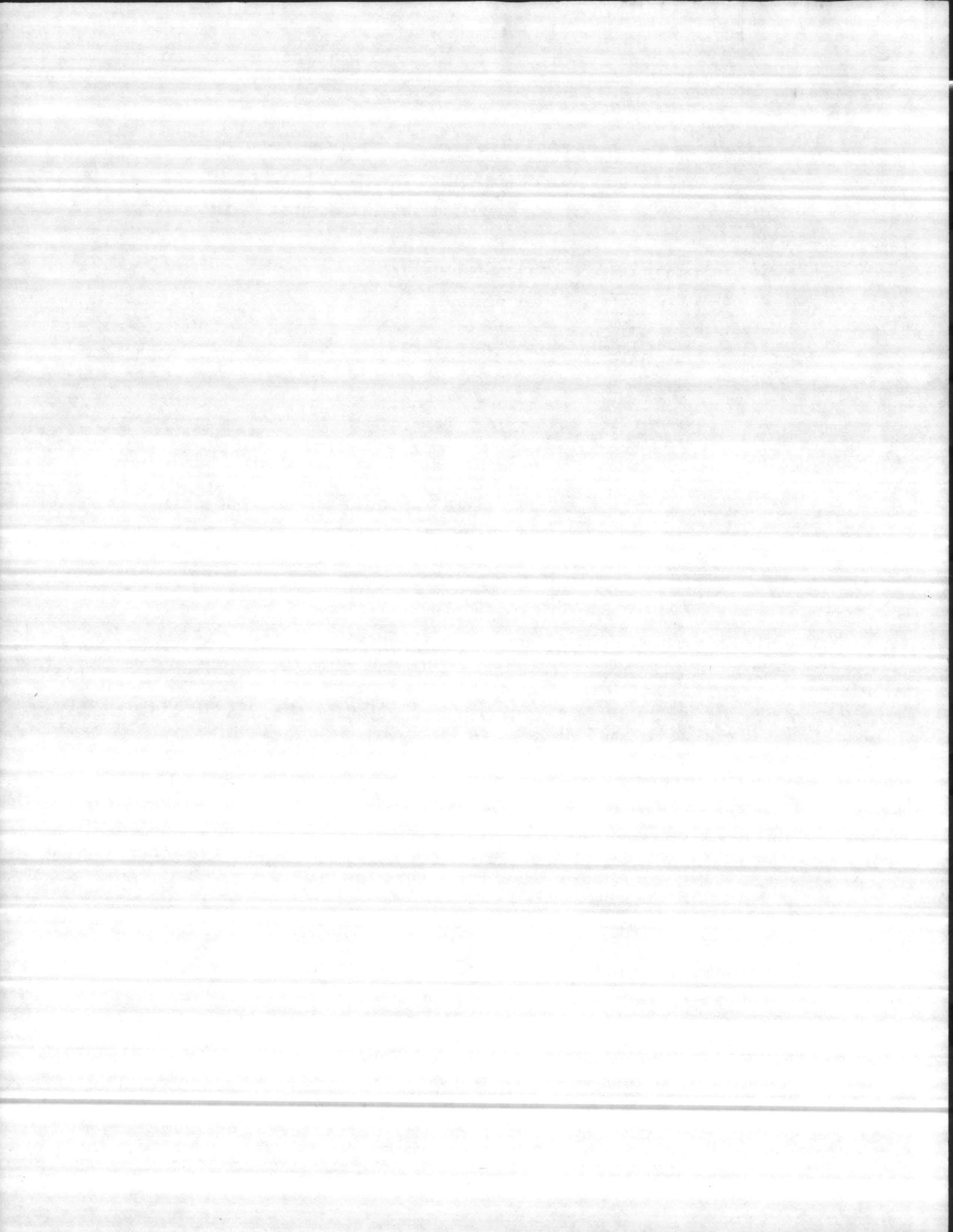
- A. P.H.
- B. Turbidity
- C. Flow

Effluent

- A. P.H.
- B. Dissolved oxygen
- C. Chlorine residual
- D. Turbidity
- E. Flow

Lift Stations BLDG # SBA-116, SBA-197, SBA-198, SBA-160

- A. Power failure (Alarm)
- B. Generator failure (Alarm)
- C. Pump on/off status, two pumps in each building.
- D. High level (Alarm)
- E. Methane, Hydrogen Sulfide gas and Oxygen content (Alarm)
- F. Intrusion (Alarm)



DATE: 30 MAY 1986

FROM: Env Engr

TO: BMO / Attn: Utilities Director

SUBJ: A/E Study: Monitoring Water + Sewage Operations

Encl: LANTDIV ltr to A/E w/ Scope of Work

1. Pls review encl ASAP:

a. Have you seen this scope?  
do you approve it?

b. Do you have any comts?

2. Due to involvement of Comm/Elec & NREAD;

Request their review as well.

FOR CEO/NREA:

this may be new to you - Util will keep us informed.

look @ it + let's talk if needed.

Copy to: CEO

NREAD

Env Engr

u/r

Bolt

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DEPARTMENT OF THE NAVY  
ATLANTIC DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
NORFOLK, VIRGINIA 23511-6287

IR7

TELEPHONE NO.  
444-9631  
IN REPLY REFER TO:

N62470-85-B-8010  
09A21B6  
23 MAY 1986

McCall-Thomas Engineering Co., Inc.  
P. O. Drawer 670  
Orangeburg, South Carolina 29116-0670

Re: A&E Contract N62470-85-B-8010, Study for Monitoring of Water and Sewage Treatment Systems and Related Equipment, Marine Corps Base, Camp Lejeune and Marine Corps Air Station, New River, North Carolina

Gentlemen:

Due to funding constraints, the scope provided by our letter of 5 September 1985 has been revised. Enclosure (1) provides a revised scope of work for the referenced contract. Please note that three separate proposals are requested and that expeditious processing is required to make A&E contract award this fiscal year.

For further information, please contact Ms. S. M. Gale, P. E., or Mr. J. P. Cuccu of this Command, telephone 444-9680 or 444-9631, area code 804.

Sincerely,

D. R. PHELPS, P. E.  
Southern Section Head, CONUS Branch  
Acquisition Project Management Office  
By direction of the Commander

Encl:  
(1) Appendix A (Revision 1) dtd 5 May 1986

Blind copy to:  
→ MCB CAMP LEJEUNE (w/encl (1))  
MCAS NEW RIVER (w/encl (1))

1944

U. S. DEPARTMENT OF AGRICULTURE  
BUREAU OF PLANT INDUSTRY  
WASHINGTON, D. C.

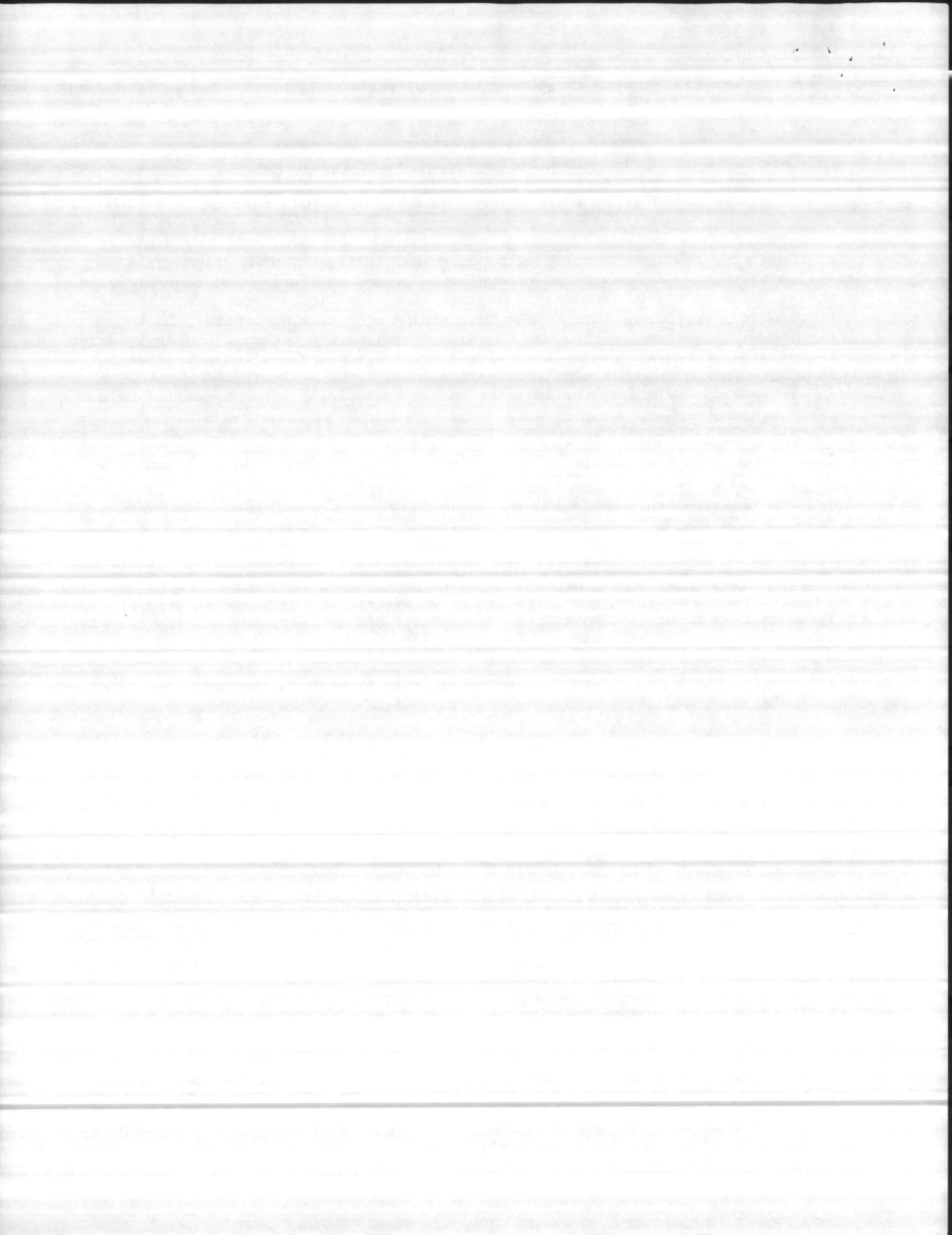
PLANT INDUSTRY INVESTIGATION REPORT

A&E Contract N62470-85-B-8010  
Study for Monitoring of Water and Sewage  
Treatment Systems and Related Equipment  
Marine Corps Base, Camp Lejeune and  
Marine Corps Air Station, New River, North Carolina

1. Develop a feasibility study with piping and instrumentation diagrams; cost estimates; basis of design; and communications, and monitoring and control system analysis for water, wastewater and swimming pool facilities located at the Marine Corps Base, Camp Lejeune and the Marine Corps Air Station, New River, North Carolina. The purpose of this study is to determine the economic and engineering feasibility of monitoring and controlling these systems via a computer system.
2. Prepare separate fee proposals for the three facility types specified below:
  - a. Water Treatment
  - b. Wastewater Treatment
  - c. Swimming Pools
3. Break down each of the fee proposals such that the below prioritized design items can be separately negotiated:
  - a. Prepare a Piping and Instrumentation Diagram (P&ID) for each type facility with a cost estimate (CE) and Basis of Design (BD). Prioritize the P&ID instruments and individually price them.
  - b. Prepare a communications system analysis for telephone, radio and other means with a CE and BD.
  - c. Prepare a Central Monitoring and Control System (CMCS) analysis for EMCS, UMACS, new dedicated system or other means with a CE and BD.
  - d. Tailor P&ID for Existing Facilities (EF) in each facility type. Prepare a site location map for each EF with symbols depicting the facility, selected communication means and the selected CMCS site location.
4. LANTNAVFACENGCOM Project Manager/Telephone:

Ms. S. M. Gale, P. E., Code 09A21B3/804-444-9670 or  
Mr. J. P. Cuccu, Code 09A21B6/804-444-9631
5. Activity Point of Contact/Telephone:

Mr. A. E. Young/919-451-3658 or  
Mr. J. Johnson/919-451-5161



6. Proposed Engineering Services Milestones: (Calendar days)

Begin work upon receipt of contract for signature and pursue the work diligently in accordance with the date schedule established therein. Your assessment of the schedule shall be provided monthly to the Project Manager.

	<u>CUMULATIVE NO. DAYS</u>	<u>GOVT REV</u>
A&E Award:	0	-
Draft:	150	(45)
Final (100%):	225	-

7. Project Submittal Distribution:

	<u>LANTNAVFACENCOM</u>	<u>ACTIVITY</u>
Draft	4	2
Final Report	3	2

MAILING ADDRESSES: DIRECT DISTRIBUTION TO EACH ADDRESSEE BY A&E IS REQUIRED

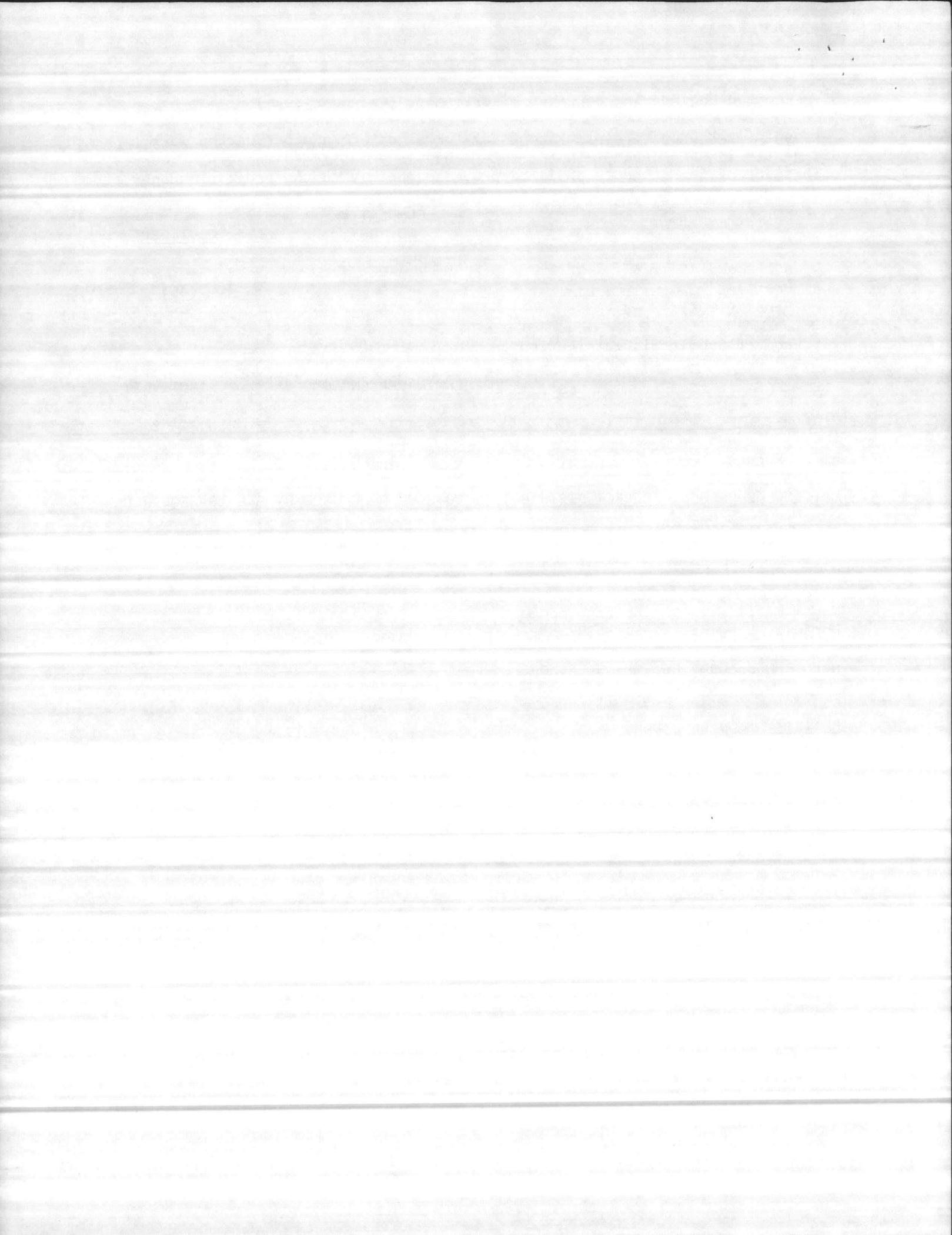
LANTNAVFACENCOM

Commander  
Atlantic Division  
Naval Facilities Engineering Command  
Norfolk, Virginia 23511-6287

Attn: Code 09A21B6, Mr. J. P. Cuccu

ACTIVITY (MCB CAMP LEJEUNE)

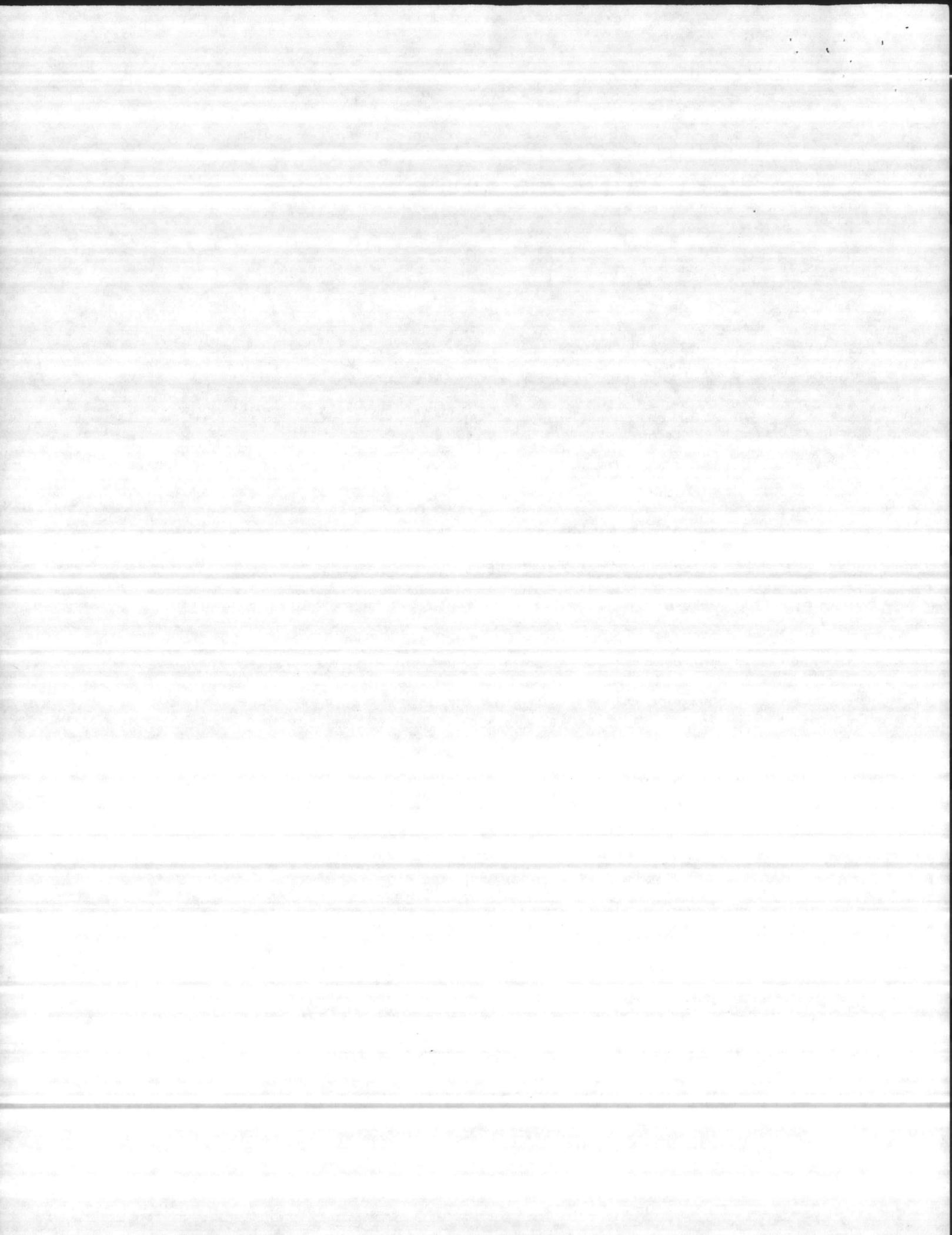
Commanding General  
Marine Corps Base  
Camp Lejeune, North Carolina 28542-5001



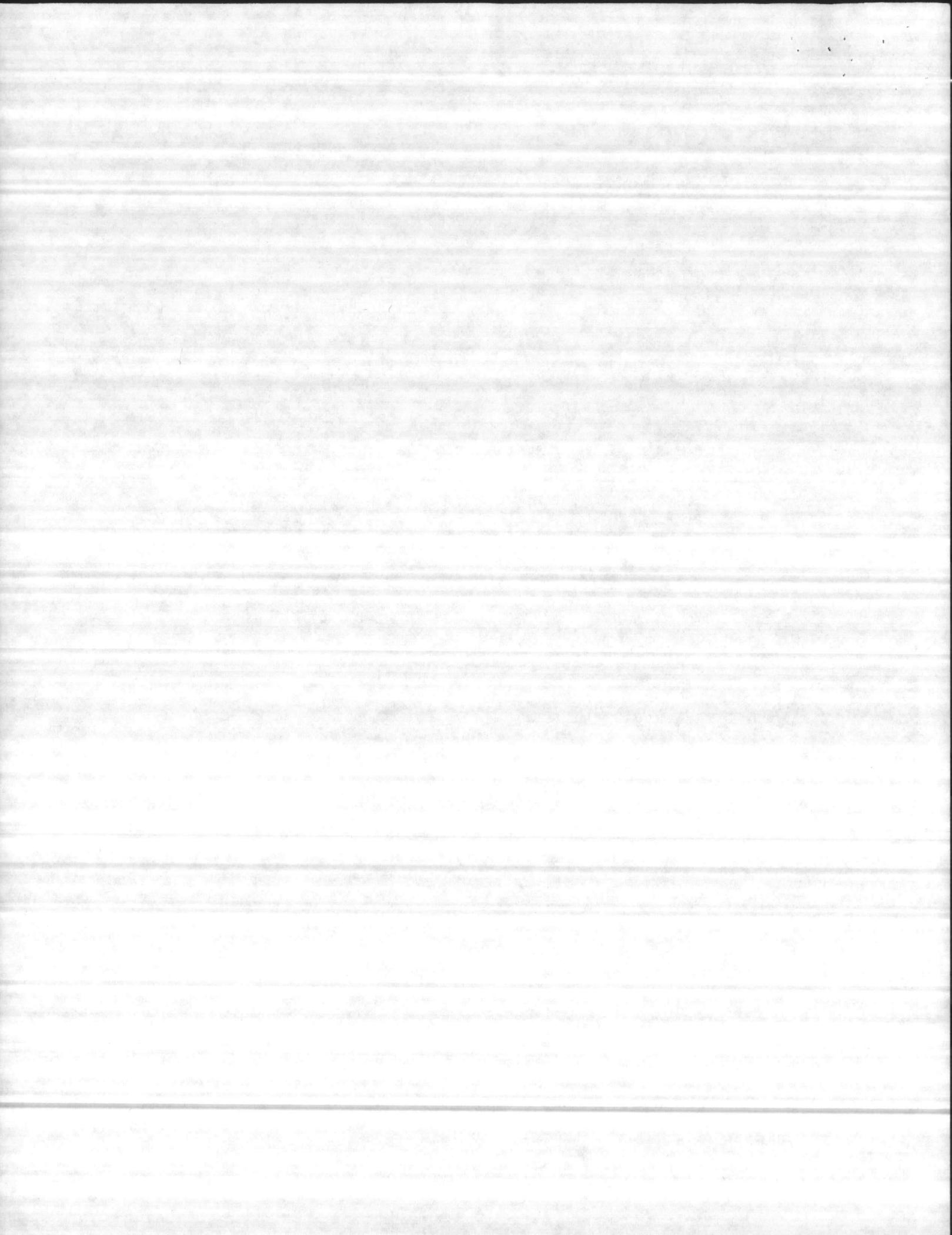
TYPE FACILITY - WATER TREATMENT

Point Type: M - Monitor  
 C - Control  
 T - Run time totalization  
 A - Alarm

<u>POINT #</u>	<u>POINT</u>	<u>TYPE</u>
1.	Raw Water Booster Pumps	M, C, T
2.	High Lift Pumps	M, C, T
3.	Generator Status	M, T
4.	Plant chlorine detection, power failure and intrusion	M, A
5.	Pump Station chlorine detection, power failure and intrusion	M, A
6.	Plant Filter Flow	M, T
7.	Softner Control and Hardness	M, C, T
8.	Pressure four points in distribution system	M
9.	Low and high water level foot readings and intrusion at tanks or reservoirs	M, A
10.	Low and high water levels and foot readings at detention tanks	M
11.	Wells	M, C, T
12.	Raw Water Flow, Hardness, Iron and P.H.	M
13.	Raw Water Chlorine	M
14.	Raw Water Fluoride	M
15.	Treated water turbidity each filter, P.H., Chlorine, hardness, iron and flow	M
16.	Treated Water Chloride	M
17.	Treated Water Stability	M
18.	Delivered water, chlorine, hardness, P.H., turbidity, iron and flow	M
19.	Delivered Water Fluoride	M



<u>POINT #</u>	<u>POINT</u>	<u>TYPE</u>
20.	Delivered Water Stability	M
21.	Delivered Water Chloride	M
22.	Pump Station Water Flow	M



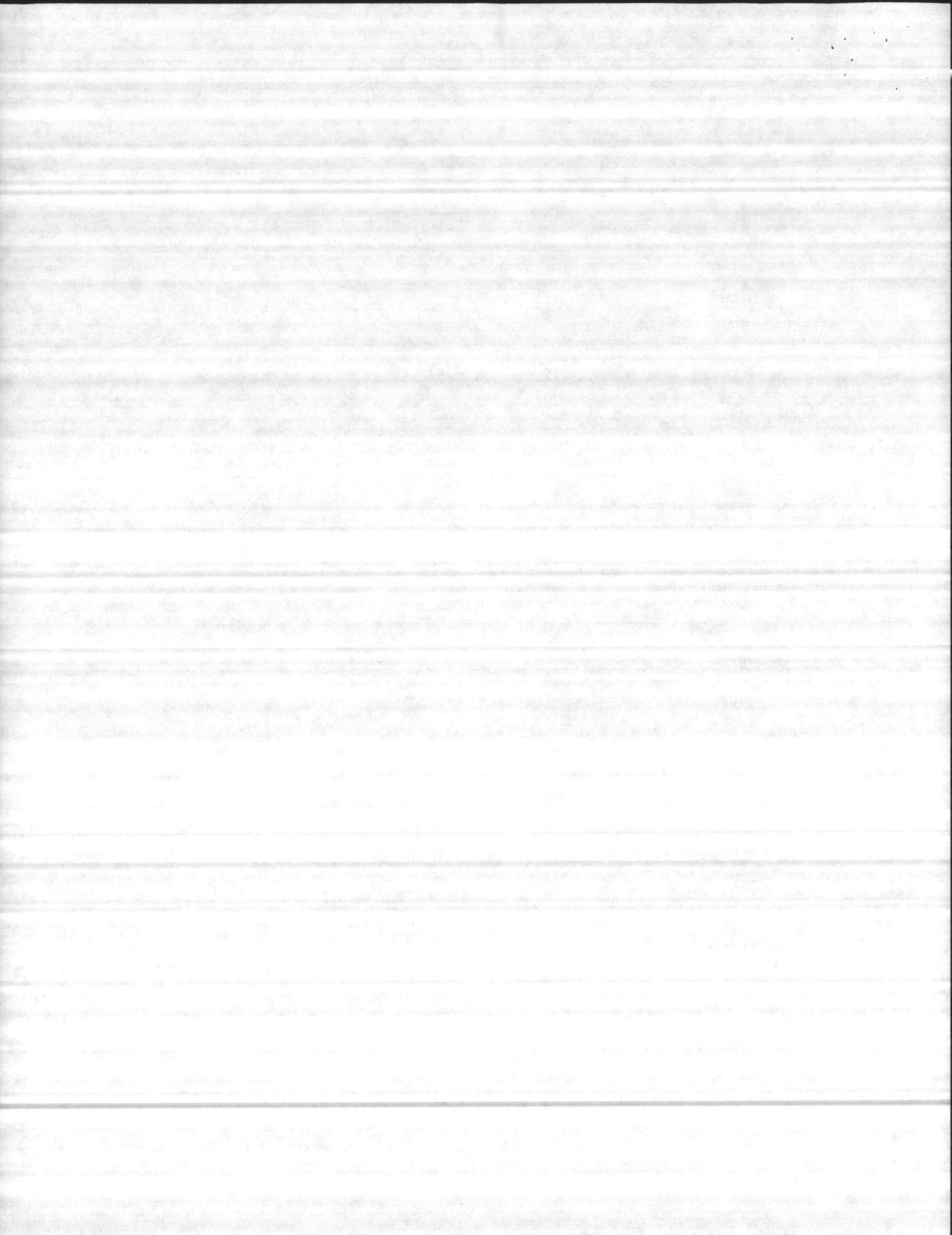
EF - WATER TREATMENT

<u>FACILITY</u>	<u>APPLICABLE POINTS</u>	<u>NO.</u>	<u>TOTAL</u>
COURTHOUSE BAY			
Plant, Bldg BB-190	2, 4, 6, 7, 8, 11, 12, 15, 16, 18, 21	8(#2), 5(#11) 1 Other	27
Detention Tank	10	1	1
Tank SBB-191	9	1	1
Elev Tank SBB-25 <i>NEW TANK - ANTRACK</i>	9	1	1
RIFLE RANGE			
Plant, Bldg RR-85	2, 4, 6, 7, 8, 11, 12, 15, 16, 18, 21	5(#2), 4(#11) 1 Other	18
Detention Tank	10	1	1
Tank SRR-86	9	1	1
Elev Tank SRR-44	9	1	1
HADNOT POINT			
Plant, Bldg 20	1, 2, 3, 4, 6, 8, 11, 12, 13, 15, 18, 19	3(#1), 4(#2) 40(#11), 1 Other	56
Reservoirs B-20, 735 and 736	9	1	3
Elev Tank S-29	9	1	1
Pump Sta TC-501	2, 5, 8, 18, 19, 20, 22	3(#2), 1 Other	9
HOLCOMB BOULEVARD			
Plant, Bldg 670	1, 2, 3, 4, 6, 8, 11, 12, 13, 15, 18, 19	4(#1), 8(#2) 18(#11), 1 Other	39
<i>Res</i> Tank S-671	9	1	1
Elev Tank S-2323 <i>STT 40, SM 624</i>	9	1	1
MCAS NEW RIVER			
Plant, Bldg 110	1, 2, 3, 4, 6, 8, 11, 12, 14, 15, 17, 18, 19, 20	2(#1), 6(#2), 26 (#11), 1 Other	45
Tank AS-107, 108	9	1	1
Elev Tank AS-4130	9	1	1
Pump Station MOQ-2002	2, 5, 8, 18, 19	4(#2), 1 Other	8
Reservoir, MOQ-2002 <i>Pump Sta TC 501</i>	9	1	1
MONTFORD POINT			
Plant, Bldg M-178	<del>2, 4, 7, (8), 11, 12, 15, 16, 18, 19</del>	3(#2), 7(#11) 1 Other	18
Reservoir SM-179	9	1	1
Tank SM-624	9	1	1

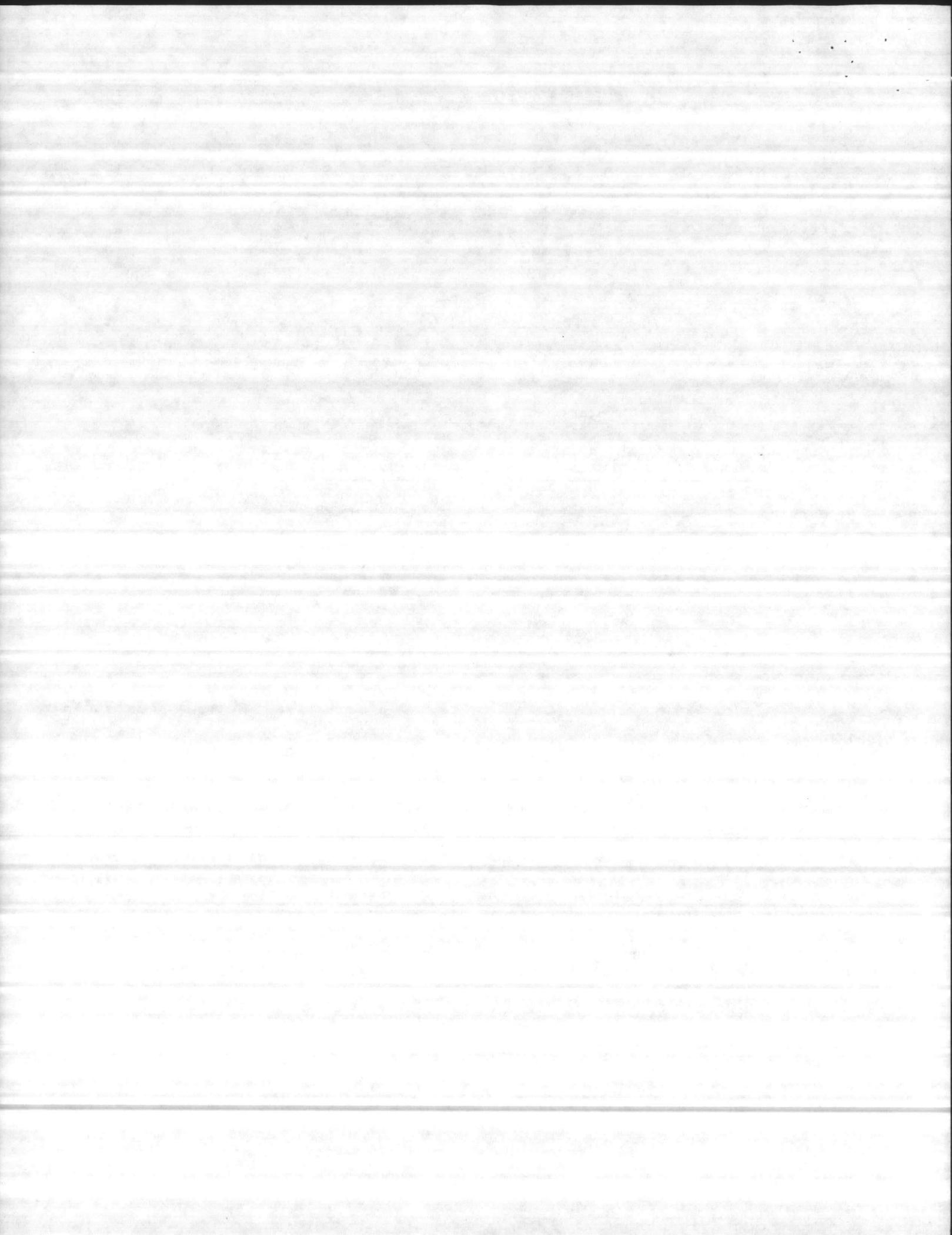
S 5  
S 1000  
SFC 314

S 330  
S 2323  
S 4004

AS-310  
STC-1070  
STC-606



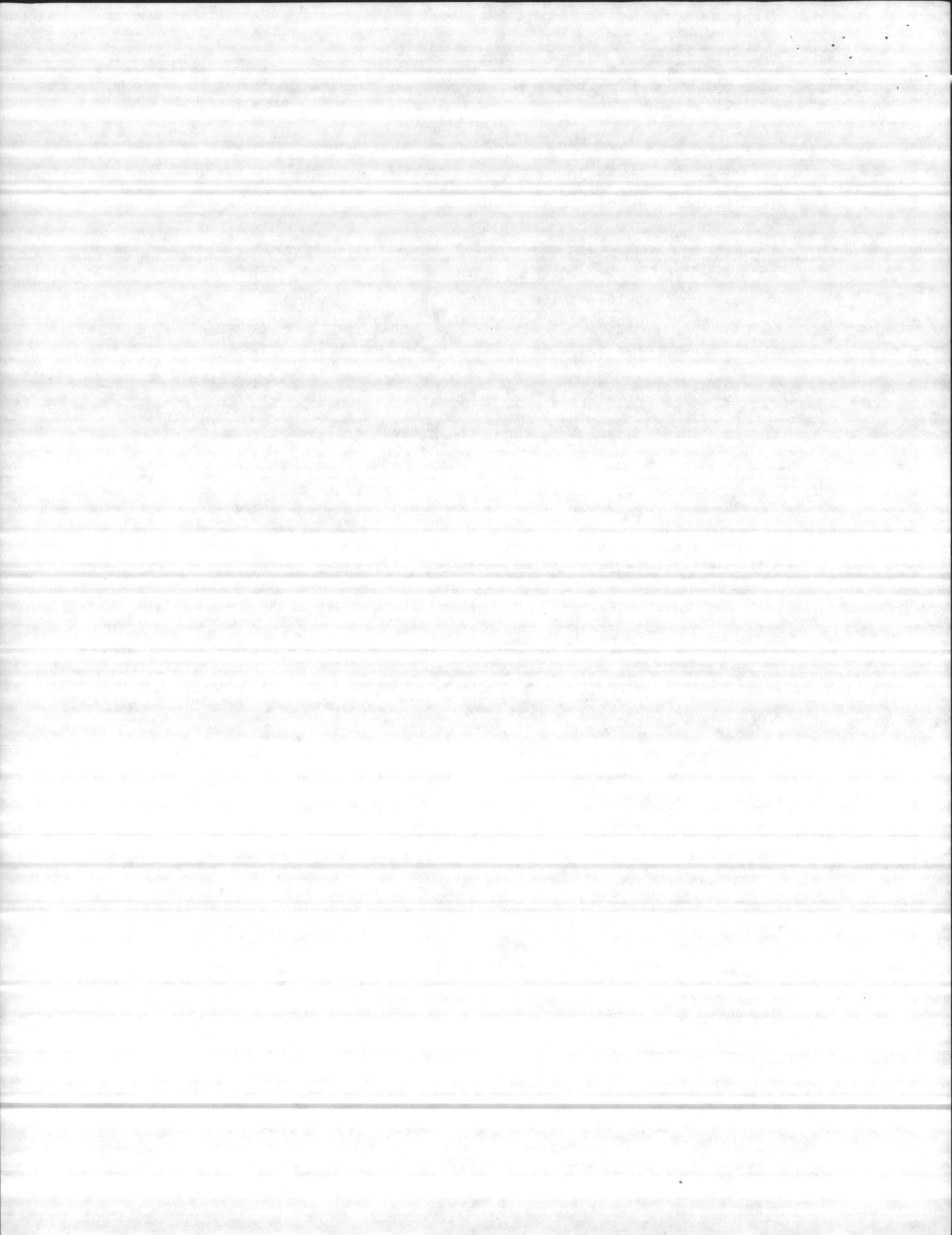
<u>FACILITY</u>	<u>APPLICABLE POINTS</u>	<u>NO.</u>	<u>TOTAL</u>
TARAWA TERRACE			
* Plant, Bldg TT-38 High Lift Pumps	2, 4, 6, 8, 11, 12, 13, 15, 18, 19	4(#2), 7(#11) 1 Other	19
Tank STT-39	9	1	1
Elev Tank STT-40	9	1	1
ONSLow BEACH			
Plant, Bldg BA-138	2, 4, 6, 7, 8, 11, 12, 15, 16, 18, 21	3(#2), 2(#11) 1 Other	14
Tank SBA-139	9	1	1
Elev Tank SBA-108	9	1	1



TYPE FACILITY - WASTEWATER TREATMENT

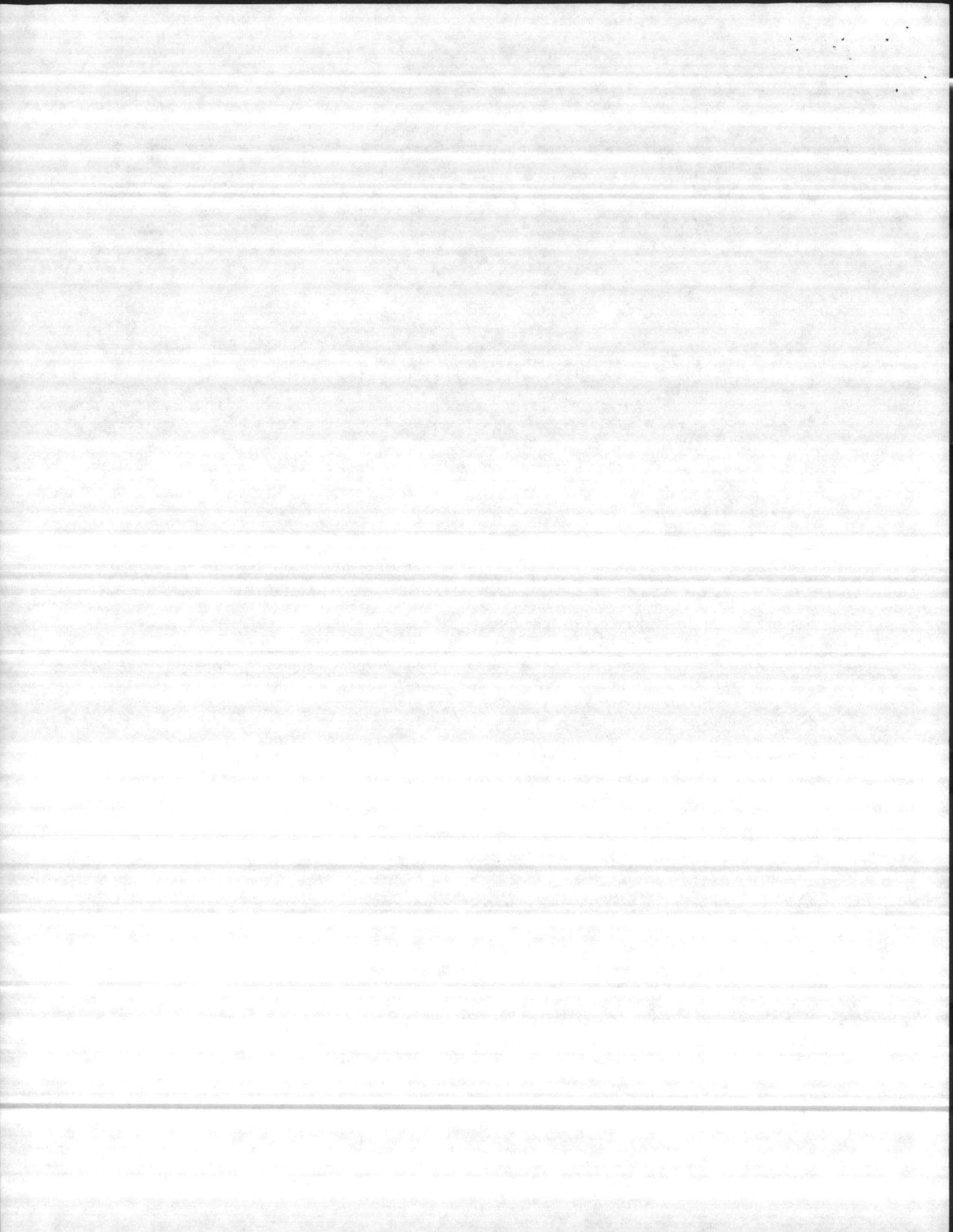
Point Type: M - Monitor  
 C - Control  
 T - Run time totalization  
 A - Alarm

<u>POINT #</u>	<u>POINT</u>	<u>TYPE</u>
1.	Plant chlorine detection, power failure, generator failure and intrusion	M, A
2.	Pumps on/off status	M
3.	Influent turbidity, P.H. and flow	M
4.	Effluent dissolved oxygen, P.H., flow, chlorine residual and turbidity	M
5.	Digester area for methane, hydrogen sulfide gas, oxygen content and temperature	M, A
6.	Lift station for power failure; high level; intrusion; and methane, hydrogen sulfide gas and oxygen content	M, A
7.	Pumps on/off status	M
8.	Lift station generator failure	M, A
9.	Oil/Water Separator (OWS) power failure and high level	M, A
10.	OWS pumps on/off status	M



EF - WASTEWATER TREATMENT

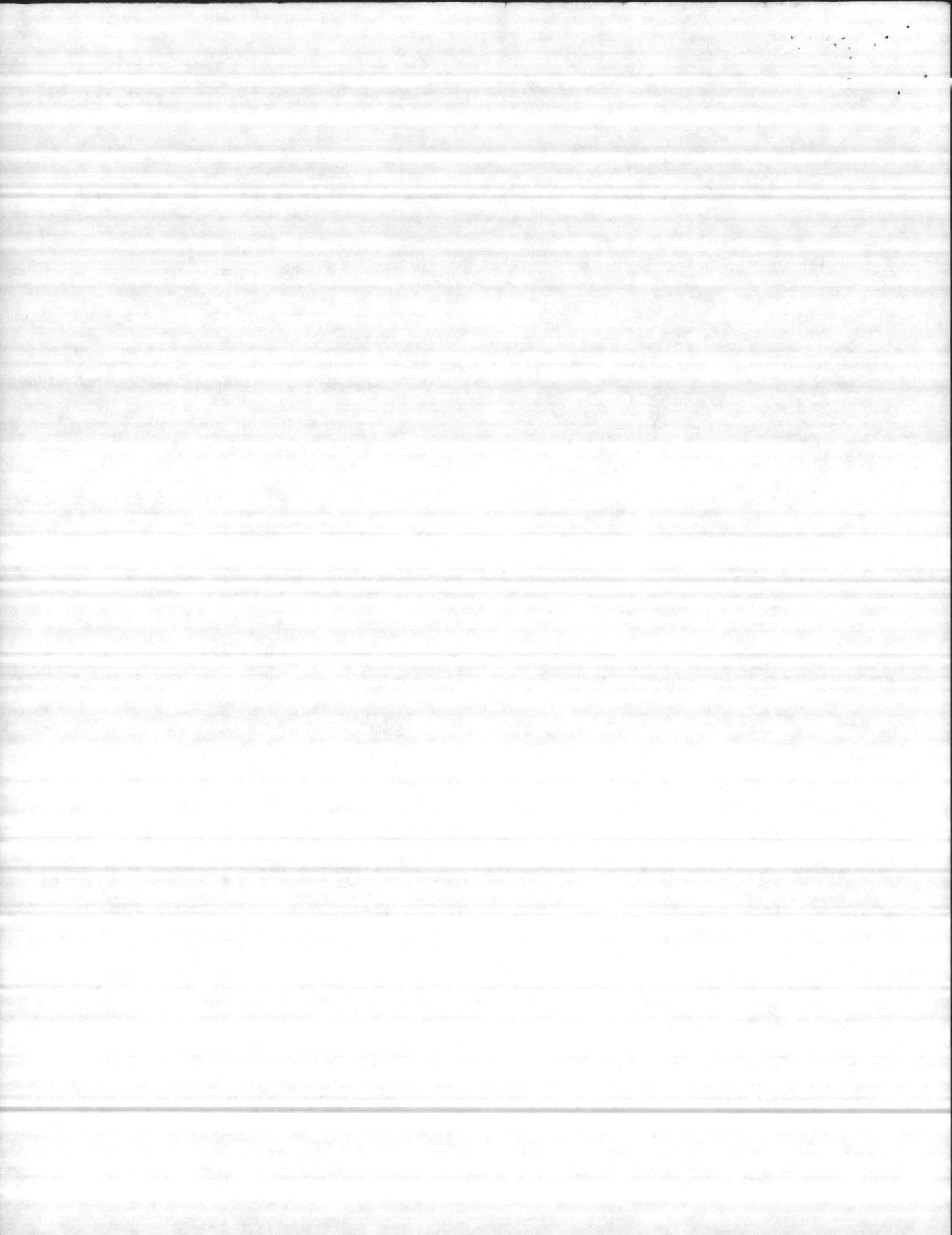
<u>FACILITY</u>	<u>APPLICABLE POINTS</u>	<u>NO.</u>	<u>TOTAL</u>
<b>TARAWA TERRACE</b>			
Plant, Bldg TT-33	1, 2, 3, 4, 5	7(#2), 1 Other	11
Lift Stations TT-32, TT-33 and TT-34	6, 7, 8	2 per	12
<b>RIFLE RANGE</b>			
Plant, Bldg RR-92	1, 2, 3, 4	4(#2), 1 Other	7
Lift Station RR-52	6, 7, 8	2	4
Lift Station SRR-60	6, 7	2	4
<b>HADNOT POINT</b>			
Plant, Bldg 22	1, 2, 3, 4, 5	10(#2), 1 Other	14
Lift Stations S-1761, S-1776, S-85, H-29, S-47A, S-1948, S-2633, S-2100, S-46, S-672, LCH-4005, SFC-315 and SFC-203	6, 7, 8	2(#7), 1 Other	52
Lift Stations S-1855, S-1055, S-702, S-PT-41, S-34, S-47, NH-110, S-865, H.Schl, SFC-116, SFC-599, SFC-260, AP-22, S-1455 and Not Ord Park	6, 7	2(#7), 1 Other	45
<b>ONSLOW BEACH</b>			
Plant, Bldg SBA-127	1, 2, 3, 4	4(#2), 1 Other	7
Lift Stations SBA-116, SBA-197, SBA-198 and SBA-160	6, 7, 8	2(#7), 1 Other	16
<b>CAMP JOHNSON</b>			
PLANT, BLDG. M-136	1, 2, 3, 4, 5	4(#2), 1 OTHER	8
LIFT STATION M-SE-23 M-SE-24	6, 7, 8	2 PER	8
WATER/OIL SEPARATOR 5 m 187	9, 10		
<b>CAMP GRICKER</b>			
TC - 543	1, 2, 3, 4, 5		
LIFT STATIONS AS-4040, AS 1001 AS-517			



TYPE FACILITY -- SWIMMING POOLS

Point Type: M - Monitor  
C - Control  
T - Run time totalization  
A - Alarm

<u>POINT #</u>	<u>POINT</u>	<u>TYPE</u>
1.	Pool power failure and intrusion	M, A
2.	Pool temperature, chlorine, P.H. stability and flow	M
3.	Pool turbidity each filter	M, T
4.	Pool filter pump on/off	M, C, T



EF - SWIMMING POOLS

<u>FACILITY</u>	<u>APPLICABLE POINTS</u>	<u>NO.</u>	<u>TOTAL</u>
Bldgs 236, 540, PP-2615, M-139, TT-20, AS-204 and AS-709	1, 2, 3, 4	2(#3&4), 1 Other	42

